WHAT IS CLAIMED IS:

1. A method for coding video data, comprising:

dividing the video data into a plurality of layers;

encoding each of the plurality of layers independently of each other to produce an encoded version of the video data; and

decoding each of the plurality of layers independently of each other to produce a reconstructed version of the video data.

2. The method as set forth in claim 1, further comprising assigning a frequency band to each of the plurality of layers such that each layer contains a unique range of frequencies.

3. The method as set forth in claim 2, wherein encoding and decoding is performed using a motion compensation technique.

4. The method as set forth in claim 1, wherein encoding further comprises dividing a reference frame of the video data into a plurality of layers containing reference sub-frames, wherein each of the reference sub-frames contains a unique frequency band.

5. The method as set forth in claim 4, further comprising generating predicted frames each containing a unique frequency band for each of the plurality layers using the corresponding reference sub-frame containing the unique frequency band to generate predicted sub-frames.

6. The method as set forth in claim 5, further comprising filtering each of the predicted sub-frames based on the unique frequency band of that predicted sub-frame such that frequencies outside of the unique frequency band are eliminated to generate modified predicted sub-frames at each of the plurality of layers.

7. A computer-readable medium having computer-executable instructions for performing the method recited in claim 1.

8. A computer-implemented process for coding video data having video frames, comprising:

dividing each of the video frames into a plurality of layers;

assigning a frequency band representing different resolution levels to each of the plurality of layers such that each layer contains a specific frequency band; and

encoding and decoding each of the plurality of layers independent of each other.

9. The computer-implemented process as set forth in claim 8, wherein dividing further comprises creating a low frequency layer containing low frequencies, a mid frequency layer containing mid-range frequencies, and a high frequency layer containing high frequencies.

10. The computer-implemented process as set forth in claim 8, wherein encoding further comprising using a motion compensation technique having reference frames, predicted frames, and current frames.

11. The computer-implemented process as set forth in claim 10, wherein each of the reference frames, predicted frames and current frames contain respective sub-frames at each of the plurality of layers.

12. The computer-implemented process as set forth in claim 11, further comprising generating the predicted sub-frames from corresponding reference sub-frames at a same layer and containing a same frequency band.

13. The computer-implemented process as set forth in claim 11, further comprising predicting the predicted sub-frames from corresponding reference sub-frames at a same layer and containing a same frequency band and from reference sub-frames at a lower layer and containing lower frequency bands.

14. The computer-implemented process as set forth in claim 8, further comprising oversampling the frequency band to eliminate spatial aliasing effects.

15. A method for coding video data containing video frames, comprising:

dividing each of the video frames into a plurality of layers;

assigning a unique frequency band to each of the plurality of layers, whereby the frequency band corresponds to resolution levels such that a lower frequency band has a lower resolution and a higher frequency band has a higher resolution;

encoding each of the plurality of layers using a lower or similar frequency band to generated encoded layers representing the video data; and

decoding each of the encoded layers using a lower or similar frequency band to produce reconstructed video data.

16. The method of claim 15, wherein encoding further comprises producing a prediction frame for each of the plurality of layers from a reference frame containing a lower or similar frequency band.

17. The method of claim 16, further comprising filtering the prediction frame for each of the plurality of layers to eliminate any frequencies outside of a corresponding frequency band for that layer.

18. One or more computer-readable media having computer-readable instructions thereon which, when executed by one or more processors, cause the one or more processors to implement the method of claim 15.

19. A computer-readable medium having computer-executable instructions for encoding video data having video frames, comprising:

dividing a video frame into a plurality of layers, whereby each layer contains a frequency band having a unique range of frequencies that is less than an entire frequency spectrum in the video frame and whereby each layer has a different range of frequencies;

generating a reference sub-frame for each layer such that each reference sub-frame contains the frequency band associated with that layer; and

generating a predicted sub-frame for each layer from a corresponding reference sub-frame, wherein the predicted sub-frame and corresponding reference sub-frame contain the same frequency band.

20. The computer-readable medium of claim 19, further comprising filtering the predicted sub-frame to remove frequencies outside of the frequency band associated with that predicted sub-frame to generate a modified sub-frame.

21. The computer-readable medium of claim 20, further comprising oversampling each frequency band to reduce aliasing effects.

22. The computer-readable medium of claim 20, further comprising generating a residual sub-frame using the modified predicted sub-frame, wherein the residual sub-frame contains a same frequency band as the modified predicted sub-frame.

23. A computer-implemented process for decoding video data encoded in layers, where each of the layers represents a different resolution level of the video data, comprising:

reconstructing a residual sub-frame containing a frequency band having a unique range of frequencies;

generating a reference sub-frame that contains the frequency band; and

generating a predicted sub-frame from the reference sub-frame, wherein the predicted sub-frame and corresponding reference sub-frame contain the same frequency band.

24. The computer-implemented process of claim 23, wherein the frequency band is a portion of all frequencies contained in the video data.

25. The computer-implemented process of claim 23, wherein the frequency band represents a resolution level of the video data.

26. The computer-implemented process of claim 23, further comprising filtering the predicted sub-frame to remove frequencies outside of the frequency band to generate a modified predicted sub-frame.

27. The computer-implemented process of claim 26, further comprising reconstructing a current sub-frame using the modified predicted sub-frame, wherein the current sub-frame contains the frequency band.

28. A hierarchical data compression system, comprising:

a hierarchical encoder that encodes video data into a plurality of layers, wherein each of the plurality of layers contains a unique frequency band;

an encoded bitstream containing a plurality of encoded layers; and

a hierarchical decoder that decodes each of plurality of encoded layers independently of other layers.

29. The hierarchical data compression system as set forth in claim 28, wherein the hierarchical encoder further comprises a hierarchical reference frame processing module that produces reference sub-frames, wherein each

reference sub-frame corresponds to the plurality of layers and contains a unique frequency band.

30. The hierarchical data compression system as set forth in claim 28, wherein the hierarchical encoder further comprises a hierarchical prediction frame processing module that generates predicted sub-frames, wherein each predicted sub-frame corresponds to the plurality of layers and contains a unique frequency band.

31. The hierarchical data compression system as set forth in claim 28, wherein the hierarchical prediction frame processing module that further comprises filters that filter the predicted sub-frames to remove frequencies outside a frequency band for each particular predicted sub-frame to generate modified predicted sub-frames.

32. A data compression system, comprising:

a non-hierarchical encoder that encodes video data using a hierarchical motion prediction scheme; and

a non-hierarchical decoder that decodes the video data encoded by the non-hierarchical encoder.

33. The data compression system as set forth in claim 32, wherein the motion prediction scheme further comprises:

a plurality of sub-frames containing specific frequency bands obtained by splitting a reference frame;

a prediction generated for each of the specific frequency bands;

frequency components that do not belong to the band that are removed; and

a single predicted frame for use by the hierarchical encoder and the hierarchical decoder, which is produced by combining the specific frequency bands.